



ORAL PYOGENIC GRANULOMA- A REVIEW

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ABSTRACT

Pyogenic granuloma or granuloma pyogenicum is a well-known oral lesion. The name pyogenic granuloma is a misnomer since the condition is not associated with pus and does not represent a granuloma histologically. Pyogenic granuloma of the oral cavity is known to involve the gingiva commonly. Extragingivally, it can occur on the lips, tongue, buccal mucosa, palate, and the like. A history of trauma is common in such sites. The etiology of the lesion is not known, though it was originally believed to be a botryomycotic infection. It is theorized that pyogenic granuloma possibly originates as a response of tissues to minor trauma and/or chronic irritation, thus opening a pathway for invasion of nonspecific microorganisms, although microorganisms are seldom demonstrated within the lesion, hormonal factors, or certain kinds of drugs. But Pathogenesis of pyogenic granuloma is still debatable.

KEYWORDS: Oral cavity, Gingival, Pyogenic granuloma.

INTRODUCTION:

Soft tissue enlargements of the oral cavity may represent a variation of normal anatomic structures, inflammation, cysts, developmental anomalies, and neoplasm. Within these lesions is a group of reactive hyperplasias, which develop in response to a chronic, recurring tissue injury that stimulates an exuberant or excessive tissue repair response. Pyogenic granuloma is of the most common entities responsible for causing soft tissue enlargements

The term "pyogenic granuloma" is a misnomer because the lesion does not contain pus and is not strictly speaking a granuloma. Approximately one-third of the lesions occur due to trauma and poor oral hygiene may also be one of the precipitating factors. While the terminology implies a benign neoplasm, most if not all fibromas represent reactive focal fibrous hyperplasias due to trauma or local irritation. Although the term "focal fibrous hyperplasia" more accurately describes the clinical appearance and pathogenesis of this entity, but it is not commonly used.

Pyogenic granuloma is a hyperactive benign inflammatory lesion that occurs mostly on the mucosa of females with high levels of steroid hormones. It is generally believed that female sex hormones play important roles in its pathogenesis. It usually arises in response to various stimuli such as low-grade local irritation, traumatic injury, hormonal factors or certain kinds of drugs.¹

It is now universally agreed that this lesion is formed as a result of an exaggerated localized connective tissue reaction to a minor injury or any underlying irritation. The irritating factor can be calculus, poor oral hygiene, nonspecific infection, over hanging restorations, cheek biting etc. Because of this irritation, the underlying fibrovascular connective tissue becomes hyperplastic and there is proliferation of granulation tissue which leads to the formation of a pyogenic granuloma

Hullihen's description in 1844 was most likely the first pyogenic granuloma reported in the English literature. It was only in 1904 that Hartzell first ever introduced the term pyogenic granuloma.

Occurrence of pyogenic granuloma in man was first described in 1897 by Poncet and Dor. At that time, it was called botryomycosis hominis. Pyogenic granuloma has been referred by variety of other names such as granuloma pediculatum benignum, benign vascular tumor, pregnancy tumor, focal fibrous dysplasia, etc.

INCIDENCE AND PREVALENCE:

Bhaskar *et al.* in their study observed that oral pyogenic granuloma comprised about 1.85% of all oral pathoses, other than caries and gingivitis treated at US Army Institute of Dental.¹

Daley *et al.* found that pregnancy epulides accounted for only 42 of the 757 epulides of all types.²

According to Cawson *et al.* oral pyogenic granuloma is relatively common. It represents 0.5% of all skin nodules in children. The pregnancy tumor variant of pyogenic granuloma occurs in up to 5% of pregnancies.³

Esmeili *et al.* in their review stated that hyperplastic reactive lesions represent as a group the most common oral lesions, excluding caries, periodontal, and periapical inflammatory disease. In this group, the second most common group is represented by hyperplastic reactive gingival/alveolar lesions, including inflammatory gingival hyperplasia, oral pyogenic granuloma, peripheral giant-cell lesion and peripheral cemento-ossifying fibroma.⁴

In an analysis of 244 cases of gingival lesions in south Indian population, Shamim *et al.* found that nonneoplastic lesions accounted for 75.5% of cases with oral pyogenic granuloma being most frequent lesion, accounting for 52.71% cases.⁵

CLINICAL FEATURES:

Oral pyogenic granuloma is a tumor like growth that occurs over a wide age range of 4.5 to 93 years with highest incidence in second and fifth decades and females are slightly more affected than males. Oral pyogenic granuloma have striking predilection for the gingival (75%) followed by lips, tongue, buccal mucosa, and hard plate. Other sites were the cheek, lips, tongue, palate, mucobuccal fold, and frenum (in descending order of frequency). Gingival lesions involve the maxilla (56%) more often than the mandible (44%), the buccal aspect more often the lingual aspect, and the anterior part of the jaws more often posterior regions. Except the lingual aspect of mandibular molars, lesions occur in all regions of the gingival. Intraorally, it can present with a wide array of clinical appearances, ranging from a sessile lesion to an elevated mass. Pyogenic granulomas generally are soft, painless (as nerves do not proliferate within the reactive hyperplastic tissue), and deep red to reddish-purple in color which are hemorrhagic with spontaneous bleeding on probing. About 65% are partly or completely ulcerated, and the ulcerated regions are covered by a fibrinous exudates.⁶ Other features are painless swelling, burning sensations and halitosis, mobility of associated teeth, displacement of teeth, bone loss, lip biting and submandibular lymphadenopathy.⁷

Young pyogenic granulomas are highly vascular in appearance; older lesions tend to become more collagenized and pink. They vary from small growths only a few millimeters in size to larger lesions that may measure several centimeters in diameter.

Pyogenic granulomas of gingival frequently develop in pregnant women, so the term pregnancy tumor or granuloma gravidarum often used. Such lesions may begin to develop during the first trimester, and their incidence increases up through the seventh month of pregnancy. Development of these lesions during pregnancy is related to the increase levels of estrogen and progesterone. After pregnancy due to return of normal hormone levels, some of these pyogenic granulomas resolve without treatment or may undergo fibrous maturation and resemble a fibroma.⁸

In some cases if pyogenic granuloma is left untreated, the lesion undergoes fibrosis due to decrease vascularity and in such cases it have little tendency to bleed and this lesion is called as Fibro-epithelial polyp.⁹

RADIOGRAPHIC FEATURES:

Radiographic findings are absent in pyogenic granuloma. However, angelopoulos AP in his review observed that localized alveolar bone resorption

in rare instances of large and long standing gingival tumors can be seen.¹⁰

MICROSCOPIC FEATURES:

Pyogenic granuloma is partly or completely covered by parakeratotic or non-keratinized stratified squamous epithelium. Major bulk of the lesion is formed by a lobulated or a non lobulated mass of angiomatous tissue. Usually, lobulated lesions are composed of solid endothelial proliferation or proliferation of capillary sized blood vessels. The amount of collagen in the connective tissue of pyogenic granuloma is usually sparse. Surface can be ulcerated and in such ulcerated lesions, edema was a prominent feature and the lesion is infiltrated by plasma cells, lymphocytes and neutrophils.¹¹

DIFFERENTIAL DIAGNOSIS:

Differential diagnosis of pyogenic granuloma includes Peripheral giant cell granuloma (The lesion more bluish, as compare to pyogenic granuloma which is red to pink and there is also radiological evidence of superficial cuffing of alveolar bone), Peripheral ossifying fibroma (underexposed radiograph shows small radiopaque foci within the shadow of growth); Capillary hemangioma (Most of hemangiomas are blanched on pressure while pyogenic granuloma does not blanch on pressure), Small benign and malignant mesenchymal tumor (higher incidence of pyogenic granuloma), Conventional granulation tissue, Hyperplastic gingival inflammation, Kaposi's sarcoma (lesions mostly seen in the palate), Bacillary angiomatosis, Angiosarcoma, and non Hodgkin's lymphoma.¹²

TREATMENT:

Surgical excision is the treatment of choice.

Some other treatment protocols such as the use of Nd:YAG laser, flash lamp pulsed dye laser, cryosurgery, intralesional injection of ethanol or corticosteroid and sodium tetradecyl sulfate sclerotherapy can be used.

CONCLUSION:

Pyogenic granuloma or granuloma pyogenicum is a well-known and most common reactive lesion. However, etiopathogenesis of oral pyogenic granuloma is still debatable. The lesion was painless and have hemorrhagic tendency. Surgical excision is a successful treatment of choice in minimizing the recurrence of lesion. A careful management of the lesion should be performed while preserving and improving the mucogingival complex.

REFERENCES:

1. Bhaskar SN, Jacoway JR. Pyogenic granuloma: clinical features, incidence, histology, and result of treatment: report of 242 cases. *J Oral Surg.* 1966;24(5):391-8.
2. Daley TD, Nartey NO, Wysocki GP. Pregnancy tumor: An analysis. *Oral Surg Oral Med Oral Pathol.* 1991;72:196-9
3. Cawson RA, Binnie WH, Speight PM, Barrett AW, Wright JM. *Lucas Pathology of tumors of oral tissues.* 5th ed. Missouri: Mosby; 1998. pp. 252-4
4. Esmeili T, Lozada-Nur F, Epstein J. Common benign oral soft tissue masses. *Dent Clin North Am.* 2005;49:223-40
5. Shamim T, Varghese VI, Shameena PM, Sudha S. A retrospective analysis of gingival biopsied lesions in south Indian population: 2001-2006. *Med Oral Pathol Oral Cir Bucal.* 2008;13:414-8.
6. Synopsis of oral pathology- S.N. Bhaskar Seventh Edition pg. 549
7. Rekha Krishanapillai, Kurian Punnoose, Punnya V Angadl, Anila Koneru: Oral pyogenic granuloma-a review of 215 cases in a south Indian teaching hospital, Karnataka, over a period of 20 years.
8. Oral and maxillofacial pathology- Neville, Damm, Allen Boquot pg. 448
9. Essentials of oral pathology- Swapan Kumar Purkait Second Edition pg. 260
10. Reet Kamal, Parveen Dahiya and Abhinay Puri: Oral pyogenic granuloma- Various concepts of etiopathogenesis article.
11. Synopsis of oral pathology- S.N. Bhaskar Seventh Edition pg. 549
12. Anil Govind Rao Gohm Text book of oral medicine Second Edition pg. 320